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## Evaluation of mitral inflow velocity profile: Optimal through plane location for mitral inflow assessment with cardiac magnetic resonance (Article)

Azarisman, S.M.<sup>abc</sup>, Wong, D.T.<sup>ab</sup>, Richardson, J.D.<sup>ab</sup>, Li, A.<sup>a</sup>, Adam, N.J.<sup>a</sup>, Shirazi, M.<sup>a</sup>, Bradley, J.<sup>a</sup>, Teo, K.S.<sup>ab</sup>, Worthley, M.I.<sup>ab</sup>, Worthley, S.G.<sup>ab</sup>

<sup>a</sup>Cardiovascular Research Centre, Royal Adelaide Hospital, Adelaide, SA, Australia

<sup>b</sup>Department of Medicine, University of Adelaide, Adelaide, SA, Australia

<sup>c</sup>Department of Internal Medicine, International Islamic University Malaysia, Pahang, Malaysia

### Abstract

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**Background:** Diastology is usually assessed using transthoracic echocardiography (TTE). Velocity-encoded phase-contrast imaging permits evaluation with cardiac magnetic resonance (CMR). Heterogeneous contour locations have been used to measure mitral (MV) inflow velocities and the optimal contour location is uncertain. We evaluated CMR MV inflow velocities against TTE to identify the optimal location. **Methods:** Revascularized acute myocardial infarction patients with normal left ventricular (LV) systolic function on TTE were assessed by 1.5T CMR. Early and late peak diastolic mitral inflow velocities were determined at 3 contour locations: (i) MV leaflet orifice, (ii) mid-MV inflow region, (iii) annulus and this was compared to TTE parameters of E/A ratio and deceleration times (DT). **Results:** Forty-four patients were analysed. Mean LVEF was 59.8±9.3%. Peak E and A velocities underestimated by CMR, E/A ratio showed moderate correlation with TTE, R<sup>2</sup> values of 0.52 and 0.46 for leaflet and inflow contours respectively. Bland-Altman analysis showed the MV leaflet contour to have excellent agreement and the best reproducibility. **Conclusion:** CMR evaluation of mitral inflow velocities has good correlation with TTE. However, measurements vary significantly. The greatest correlation was with MV leaflet and weakest relationship with annulus contour.

### Author keywords

Cardiac magnetic resonance   Diastology   Echocardiography

### Indexed keywords

ENTREE medical terms:

acute heart infarction   adult   aged   article   blood flow velocity  
cardiovascular magnetic resonance   clinical article   clinical assessment   clinical evaluation  
controlled study   deceleration   diagnostic test accuracy study   diastolic dysfunction   female  
flow measurement   heart left ventricle contraction   heart left ventricle enddiastolic pressure  
heart left ventricle outflow tract   heart muscle revascularization   human   male  
middle aged   mitral valve   mitral valve inflow velocity   nuclear magnetic resonance scanner  
predictive value   reproducibility   sensitivity and specificity   transthoracic echocardiography

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